

Occurrence Of Pulmonary Tuberculosis: Associated Socio-Demographic Factors And The Role Of Knowledge And Awareness

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Abstract:

Background: To study the relation between the occurrence of pulmonary tuberculosis and its association with the socio-demographic factors and the role of knowledge and awareness in new clinical suspects of pulmonary tuberculosis. Hence, understanding the occurrence of pulmonary tuberculosis in different sectors of the society, localities are very important to develop appropriate control strategies as the frequency of infestation varies with age, sex and different socio-demographic, economic and geographical location of the general population.

Methods: A cross-sectional hospital based study was conducted among 300 new clinically suspected patients of pulmonary tuberculosis during the period of May 2016- June 2017. Personal interview was conducted with each of the suspects with a pre-designed questionnaire and in the case of child and aged patients with their parents/guardian.

Results: Of the total suspected cases, 27.33% were positive cases of pulmonary tuberculosis and 72.67% were negative cases. Among the positive cases 51% were female patients and 49% were male. Evaluation of the various socio-demographic factors revealed that the burden of pulmonary tuberculosis is significantly associated with the gender distribution, marital status, residential setting, cross ventilation, overcrowding, educational status, history of contact, smoking and alcoholism with p -value < 0.05. The analysis of the mean distribution of the true knowledge and awareness revealed that only 57.85% patients had knowledge of the factors associated with the cause and spread of the disease.

Conclusion: Lack of knowledge, awareness and socio-demographic contributes to the vulnerability and spreading the disease unknowingly. Thus, emphasis on planning a strategy; providing health education for their better health from the health clinics/clinicians is vital for the better management and control of the disease.

Keywords: Pulmonary tuberculosis, Socio-demographic, Awareness, Knowledge, Health education.

I. INTRODUCTION

Uncontrolled spread of pulmonary tuberculosis (PTB) remains the major concern all around the world. Understanding the cause and effect of all the factors determining the occurrence of PTB in the population is the

need of the hour. Broadly seen there are many risk factors associated with the progression of latent TB to active TB disease in segments of the population, these risk factors may be biomedical (HIV infection, alcoholism, diabetes, tobacco use, malnutrition, silicosis, malignancy), environmental (indoor air pollution, ventilation) or socio-economic

conditions (overcrowding, urbanization, migration, poverty). The impact of these determinants on PTB epidemiology has to be fully understood. Researchers have emphasised on further research on exploring the social, economic and geographical contexts in which the patient is embedded. Socio-demographic profiling like unemployment, drug abuse, alcoholism, smoking and poor treatment adherence are important risk factor. In different countries studies have reported that knowledge about and stigma towards PTB is affected by socio-economic variables, stigma, illiteracy, low-awareness, and gender. Urbanization brings large number of people together; thus documenting higher rate of PTB transmission, being an obstacle in effective cure, prevention and control of the disease. It has also been documented that when patients know about the natural history of PTB, its complications and the importance of complying with drug therapy, their adherence to the prescribed regimen is improved. Thus, the study aims at identifying the association of socio demographic variables, knowledge and awareness with the prevalence of PTB amongst the new suspected cases of PTB.

II. MATERIALS AND METHODS

STUDY DESIGN AND STUDY POPULATION

The present study is a cross-sectional hospital based study conducted in Sikkim at a tertiary care referral hospital in the department of Chest and TB and department of Microbiology, from May 2016 to June 2017. The institutional ethical clearance was obtained prior to the study documented as IEC/C 2016-053. Only new clinically suspected cases of PTB, not on anti-tubercular regimen and provided consent were enrolled for the study.

STUDY TOOL AND COLLECTION OF DATA

A pre-designed questionnaire comprising a set of 27 questions (14 socio-demographic and 13 knowledge and awareness) was used to interview and to collect. Personal interview was conducted with each of the suspects to gain a better insight.

COLLECTION OF THE SPECIMENS AND PROCESSING

Two sputum samples one spot and one early were collected in a sterile, leak proof 5-10ml container and were transported to the Microbiology Tuberculosis laboratory. Auramine-O staining was performed to determine the occurrence of the disease among the study population.

STATISTICAL ANALYSIS

We performed all the analysis using GraphPad InStat (GraphPad Software Inc., San Diego, USA), with the level of significance specified in reference to two tailed, type one error (p-value) less than 0.05.

III. RESULTS

DIAGNOSTIC CLASSIFICATION

A total of 26.67% patients were diagnosed with PTB. The load of the disease was found to be dominant in the female population with 51.25% of the total PTB cases and 48.75% of the male population. Gender wise classification of the data revealed that female suspects had maximum number of positive PTB case (P<0.05).

ANALYSIS OF THE SOCIO-DEMOGRAPHIC DETERMINANTS

The data from Table 1 represents the data obtained by socio-demographic analysis. Age-wise classification of the PTB patients revealed the burden of the disease amongst the age-group of 22-31 years with 32.50% positive cases; however, no significant association was determined on the basis of age. Marital status played a very important role in determining the burden of the disease, where 56.25% of the patient who were single were more susceptible to PTB. Distribution of PTB cases among the various races revealed that 47.50% of the Nepali patients had PTB. PTB was predominating in the people residing in an urban setting with 60% of the positive cases. Patients who accommodated in the pucca house were more susceptible to PTB with 46.25% of the positive cases and 60% did not have cross ventilation in their houses. However, patients who lived alone or in a nuclear family were more susceptible to PTB with 58.75% of the positive cases. Furthermore, patients who lived in an overcrowded setting had the maximum number of PTB cases with 58.75% positive cases. Illiteracy was determined be a major factor contributing to PTB with 68.75% of the positive cases were 48.75% of the positive case were unemployed. Seventy percent of the PTB had the history of contact. Forty-nine percent of the PTB patients smoked regularly and 38.75% regularly consumed alcohol. It is evident from the study that lack of education, compromised living standards, substance abuse and history of contact is the major factors associated with the occurrence of the disease and its spread.

CATEGORY	CHARACTERISTICS	MTB POSITIVE	MTB NEGATIVE	P-VALUE
GENDER	MALE (146)	39	107	0.000(p<0.05)*
	FEMALE(154)	41	113	
AGE	2-11 (21)	03	18	0.749(p>0.05)
	12-21(55)	16	39	
	22-31(77)	26	51	
	32-41(50)	10	40	
	42-51(31)	07	24	
	52-61(19)	06	13	
	62-71(28)	07	21	
	72-81(15)	04	11	
	82-91(3)	01	2	
	>92(1)	00	01	
MARITAL STATUS	SINGLE (142)	45	97	0.005(p<0.05)*
	MARRIED(99)	31	68	
	DIVORCED(28)	02	26	
	SEPERATED(22)	01	21	
	WIDOW(09)	01	08	
	WIDOWER(00)	00	00	
RACES	NEPALI(138)	38	100	0.088(p>0.05)
	BHUTIA(82)	20	62	
	BENGALI(00)	00	00	
	MARWARI(29)	08	21	
	BEHARI(12)	01	11	
	MUSLIM(32)	08	24	
	OTHER(7)	05	02	
RESIDENTIAL SETTING	URBAN (145)	48	97	0.014(p<0.05)*
	RURAL(155)	32	123	
TYPE OF	KUCCHA(102)	26	76	

HOUSE	SEMI PUCCA(66)	17	49	0.893(p>0.05)
	PUCCA(132)	37	95	
CROSS VENTILATION	YES(160)	30	130	0.000(p<0.05)*
	NO(140)	50	90	
TYPE OF FAMILY	NUCLEAR(164)	47	117	0.450(p>0.05)
	JOINT(112)	29	83	
	EXTENDED(24)	04	20	
OVERCROWDING	ABSENT(165)	33	132	0.004(p<0.05)*
	PRESENT(135)	47	88	
EDUCATION	ILLITERATE(231)	55	176	0.040(p<0.05)*
	LITERATE(69)	25	44	
OCCUPATION	PROFESSIONAL(45)	09	36	0.282(p>0.05)
	SKILLED(27)	11	16	
	UNSKILLED (85)	22	63	
	UNEMPLOYED(143)	38	105	
H/O TB IN FAMILY	YES(69)	56	175	0.030(p<0.05)*
	NO(231)	24	45	
SMOKING	REGULAR(144)	39	105	0.020(p<0.05)*
	NONE(107)	25	82	
	OCCASIONAL(23)	03	20	
	EX-ALCOHOLIC(26)	13	13	
ALCOHOL INTAKE	REGULAR(138)	31	107	0.026(p<0.05)*
	NONE(84)	25	59	
	OCCASIONAL(40)	07	33	
	EX-ALCOHOLIC(38)	17	21	

Table 1: Socio-demographic profiling

THE BODY CAN BE AFFECTED BY PTB?	ANY PART OF THE BODY	84(28%)
DOES SMOKING CAUSE PTB?	YES	158(53%)
	NO	66(22%)
	MAY BE	17(6%)
	DON'T KNOW	59(20%)
CAN PTB BE TRANSMITTED FROM ONE PERSON TO ANOTHER?	YES	273(91%)
	NO	27(9%)
CAN WE PREVENT THE OCCURANCE OF PTB?	YES	257(86%)
	NO	43(14%)
CAN PROPER TREATMENT CURE PTB?	YES	279(93%)
	NO	21(7%)
HAVE YOU HEARD ABOUT RNTCP?	YES	02(1%)
	NO	298(99%)
HOW IS PTB DIAGNOSED BY DOCTORS?	DISCUSSION WITH THE PATIENTS	25(8%)
	X-RAY	57(19%)
	SPUTUM SMEAR MICROSCOPY	129(43%)
	CULTURE TEST	07(2%)
DURATION OF TREATMENT FOR PTB?	1 MONTH	6(2%)
	3 MONTHS	42(14%)
	6 MONTHS	108(36%)
	6-9 MONTHS	144(48%)

Table 2: TB knowledge item response and awareness

ANALYSIS OF KNOWLEDGE AND AWARENESS

Further, on the analysis of the data obtained in Table 2, it was determined only 72% suspects knew what PTB is, only 16% knew what extra pulmonary tuberculosis is. Only 43% could answer correctly how PTB can spread, 70% could answer which organ is affected by PTB, 28% correctly answered which part of the body is affected by PTB. If smoking causes PTB, 53% answered yes. Ninety-two percent answered that PTB is a communicable disease and 86% answered that it can be prevented. Ninety-three percent answered that PTB can be cured if treated properly, 45% answered correctly how PTB is diagnosed and 45% knew how long the treatment of TB takes. However only 1% knew what RNTCP is. On an average, calculating the mean it was determined that only 57.85% only had the correct knowledge of the disease, leaving 42.15% of the suspects unaware of the seriousness of the critical social disease, making it a major concern for the society were if in contact of the disease may lead to the spread of the disease in the society unknowingly and increasing the vulnerability of the problem.

CATEGORY	SUBGROUP	NO. OF CASES(%)
DO YOU KNOW ABOUT PTB?	YES	216 (72%)
	NO	84 (28%)
DO YOU KNOW ABOUT EPTB?	YES	49(16%)
	NO	251(84%)
MAIN CAUSES OF PTB (TB OF LUNGS)?	INFECTION	130(43%)
	BAD HABIT	93(31%)
	INADEQUATE DIET	77(26%)
DO YOU KNOW HOW PTB SPREADS?	WATER	34(11%)
	SHARING FOOD WITH PERSON INFECTED WITH TB	71(24%)
	AIR, WHEN INFECTED PERSON COUGHS OR SNEEZES	193(64%)
	HOLDING HANDS WITH INFECTED PERSON	02(1%)
WHICH ORGAN IS MOST COMMONLY AFFECTED BY PTB BACTERIA?	LUNGS	210(70%)
	BONE	18(6%)
	BRAIN	04(1%)
	LIVER	68(23%)
WHICH PARTS OF	ONLY THE LUNGS	216(72%)

IV. DISCUSSION

PTB is the leading infectious cause of death in young women in developing countries. This could be worse in settings with health services insensitive to gender specific needs. This was explained by sex (biological determinant-progression from TB infection to disease is likely to be faster for women compared with men in their reproductive years) and gender (sociocultural determinants influencing access to TB care leading to differential access to health care like economic problem, inability to make decisions, poor health seeking behaviour and stigma). That comprise the women ability to utilize the available health service. Our study also revealed higher burden of TB in male than female suspects.

It was found that adults living in a household with husband and wife had the lowest risk of developing TB in an urban community in sub-Saharan Africa. It was also reported that the risk of TB was higher in singles than the married individuals. The highest incidence of PTB among men was found in those who were divorced and the lowest in married men. Singles and widowed men had an incidence between the two extremes. It was determined to be similar in our study also with maximum PTB case among the single patients residing in a nuclear family.

Our study revealed the burden of PTB to be higher in suspects residing an overcrowded setting with no or poor cross ventilation. Studies have also reported the association of PTB in an overcrowded residential setting and poor ventilation in homes, workplaces, recreational spaces and health facilities foster high rates of transmission. Air-borne mycobacteria spread easily in settings of overcrowding and where poor nutrition and other illnesses and diseases reduce the immune

defences, putting impoverished people at high risk of acquiring and developing active disease. It is suggested that high incidence of PTB in communities with a higher average housing density.

A higher level of education was significantly protective against the spread of PTB. Higher education (intermediate or college grade) and higher income (>5000/month) were significantly associated with not being a TB patient. In our study we found a significant association of PTB disease with illiteracy and unemployment.

India is positioned second in terms of tobacco consumption in the world. According to Global Adult Tobacco Survey (GATS) in 2009-2010, 25% of the adults were smokeless tobacco users and 14% were current smokers.^[21] Several studies have demonstrated that smoking is positively associated with PTB incidence. Three recent systemic reviews and meta-analysis have confirmed that smoking is an important risk factor for being infected with MTB, progression as a clinical disease and dying from PTB. Our study also reported a significant association of PTB in patients who smoked and consumed alcohol regularly. In a study conducted by Jethani M et al; described different risk factors in terms of low socio-economic status, past history of TB, history of TB in the family and close contacts, smoking, addictions to alcohol were all found to be associated with high rate of TB among the productive age group 18 years and above.

In a survey conducted by the National Tuberculosis Institute (NTI), Bangalore, it was found that in rural and urban districts observed prevalence of 337 to 406/100,000.

PTB is transmitted by proximity but also by ignorance. The lack of knowledge; having cough for more than two weeks is a possible symptom of a fatal but curable disease prevents millions of people from seeking treatment.^{[28], [29]} Studies have shown that patients with low knowledge about the symptoms of PTB are more likely to postpone seeking care and getting tested. It has been reported in some communities, patients with low knowledge are more likely to visit traditional healers and pharmacists than DOTS providers. Studies interprets public health education contributes to the success of PTB programmes, especially when peers and family members are involved.

Limitation of our study was that only a small number of suspected PTB patients were present as it is a central referral hospital and patients included were only the ones who attended our hospital for their treatment. Therefore, the clinical findings of our study may also vary depending on the load of the disease in this region.

V. CONCLUSION

From the study it can be interpreted that providing basic information to every single clinical suspect along with their family members is the need of the hour in curtailing the spread of PTB in the society; which could be avoided if the only every individual in the society is informed and educated. Thus, it is the clinicians and health care professionals who can promote clear and conceptual health education by considering PTB not only as a medical concern but also as a serious social problem.

CONFLICTS OF INTREST

The authors have none to declare.

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